

**Notice of Allowability**

Application No.

10/696,649

Examiner

Jyoti Nagpaul

Applicant(s)

MANGINELL ET AL.

Art Unit

1743

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to July 17, 2006.
2. ☒ The allowed claim(s) is/are 1,2,5,9,12-20 and 23-62.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some\* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

- |   |   |
|---|---|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892)  | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)           |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                | 6. <input type="checkbox"/> Interview Summary (PTO-413),<br>Paper No./Mail Date _____ |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),<br>Paper No./Mail Date _____ | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment                   |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit<br>of Biological Material          | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance  |
|   | 9. <input type="checkbox"/> Other _____   |

### EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Kevin Being on July 17, 2006.

**The application has been amended as follows:**

Cancel Claims 3-4, 6-8, 10-11, 15 and 21-22

1. (currently amended): A non-planar chemical preconcentrator, comprising:

a substrate having a suspended membrane formed thereon with at least one hole formed in the suspended membrane for flow of a sample fluid therethrough,

at least one resistive heating element disposed on a surface of the suspended membrane,

a sorption support structure disposed on a surface of the membrane, and

a sorptive material disposed on the sorption support structure to sorb and concentrate at least one chemical species from a the sample fluid, with the chemical species being releasable from the sorptive material upon heating of the sorptive material by the at least one resistive heating element.

18. (currently amended): The non-planar chemical preconcentrator of claim 1, wherein the sorptive material comprises a sol-gel oxide.

23. (new): A non-planar chemical preconcentrator, comprising:

a substrate having a suspended membrane formed thereon,  
at least one resistive heating element disposed on a surface of the suspended membrane,

a sorption support structure comprising a plurality of concentric hollow cylinders disposed on a surface of the membrane, and

a sorptive material disposed on the sorption support structure to sorb and concentrate at least one chemical species from a sample fluid, with the chemical species being releasable from the sorptive material upon heating of the sorptive material by the at least one resistive heating element.

24. (new): The non-planar chemical preconcentrator of claim 23, wherein the sorption support structure comprises a material selected from the group consisting of dielectrics and semiconductors.

25. (new): The non-planar chemical preconcentrator of claim 23, wherein the suspended membrane is selected from the group consisting of semiconductors and dielectrics.

26. (new): The non-planar chemical preconcentrator of claim 23, wherein the suspended membrane comprises a polymer layer.

27. (new): The non-planar chemical preconcentrator of claim 23, wherein the at least one resistive heating element comprises a metal, metal alloy, or doped semiconductor material.

28. (new): The non-planar chemical preconcentrator of claim 23, wherein the sorptive material comprises a microporous material.

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29. (new): The non-planar chemical preconcentrator of claim 28, wherein the sorptive material comprises porous silicon.

30. (new): The non-planar chemical preconcentrator of claim 23, wherein the sorptive material comprises a sol-gel oxide.

31. (new): The non-planar chemical preconcentrator of claim 23, wherein the sorptive material comprises a polymer.

32. (new): The non-planar chemical preconcentrator of claim 23, wherein the sorptive material comprises a particulate material.

33. (new): A non-planar chemical preconcentrator, comprising:

a substrate having a suspended membrane formed thereon,

at least one resistive heating element disposed on a surface of the suspended membrane,

a sorption support structure comprising a plurality of fins disposed on a surface of the membrane, and

a sorptive material disposed on the sorption support structure to sorb and concentrate at least one chemical species from a sample fluid, with the chemical species being releasable from the sorptive material upon heating of the sorptive material by the at least one resistive heating element.

34. (new): The non-planar chemical preconcentrator of claim 33, wherein the sorption support structure comprises a material selected from the group consisting of dielectrics and semiconductors.

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35. (new): The non-planar chemical preconcentrator of claim 33, wherein the suspended membrane is selected from the group consisting of semiconductors and dielectrics.

36. (new): The non-planar chemical preconcentrator of claim 33, wherein the suspended membrane comprises a polymer layer.

37. (new): The non-planar chemical preconcentrator of claim 33, wherein the at least one resistive heating element comprises a metal, metal alloy, or doped semiconductor material.

38. (new): The non-planar chemical preconcentrator of claim 33, wherein the sorptive material comprises a microporous material.

39. (new): The non-planar chemical preconcentrator of claim 38, wherein the sorptive material comprises porous silicon.

40. (new): The chemical preconcentrator of claim 38, wherein the sorptive material comprises a sol-gel oxide.

41. (new): The non-planar chemical preconcentrator of claim 38, wherein the sorptive material comprises a polymer.

42. (new): The non-planar chemical preconcentrator of claim 38, wherein the sorptive material comprises a particulate material.

43. (new): A non-planar chemical preconcentrator, comprising:

    a substrate having a suspended membrane formed thereon,

    at least one resistive heating element disposed on a surface of the suspended membrane,

a sorption support structure comprising a plurality of posts disposed on a surface of the membrane, and

a sorptive material disposed on the sorption support structure to sorb and concentrate at least one chemical species from a sample fluid, with the chemical species being releasable from the sorptive material upon heating of the sorptive material by the at least one resistive heating element.

44. (new): The non-planar chemical preconcentrator of claim 43, wherein the sorption support structure comprises a material selected from the group consisting of dielectrics and semiconductors.

45. (new): The non-planar chemical preconcentrator of claim 43, wherein the suspended membrane is selected from the group consisting of semiconductors and dielectrics.

46. (new): The non-planar chemical preconcentrator of claim 43, wherein the suspended membrane comprises a polymer layer.

47. (new): The non-planar chemical preconcentrator of claim 43, wherein the at least one resistive heating element comprises a metal, metal alloy, or doped semiconductor material.

48. (new): The non-planar chemical preconcentrator of claim 43, wherein the sorptive material comprises a microporous material.

49. (new): The non-planar chemical preconcentrator of claim 48, wherein the sorptive material comprises porous silicon.

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50. (new): The non-planar chemical preconcentrator of claim 43, wherein the sorptive material comprises a sol-gel oxide.

51. (new): The non-planar chemical preconcentrator of claim 43, wherein the sorptive material comprises a polymer.

52. (new): The non-planar chemical preconcentrator of claim 43, wherein the sorptive material comprises a particulate material.

53. (new): A non-planar chemical preconcentrator, comprising:

- a substrate having a suspended membrane formed thereon,

- at least one resistive heating element disposed on a surface of the suspended membrane,

- a sorption support structure comprising a honeycomb structure disposed on a surface of the membrane, and

- a sorptive material disposed on the sorption support structure to sorb and concentrate at least one chemical species from a sample fluid, with the chemical species being releasable from the sorptive material upon heating of the sorptive material by the at least one resistive heating element.

54. (new): The non-planar chemical preconcentrator of claim 53, wherein the sorption support structure comprises a material selected from the group consisting of dielectrics and semiconductors.

55. (new): The non-planar chemical preconcentrator of claim 53, wherein the suspended membrane is selected from the group consisting of semiconductors and dielectrics.

56. (new): The non-planar chemical preconcentrator of claim 53, wherein the suspended membrane comprises a polymer layer.
57. (new): The non-planar chemical preconcentrator of claim 53, wherein the at least one resistive heating element comprises a metal, metal alloy, or doped semiconductor material.
58. (new): The non-planar chemical preconcentrator of claim 53, wherein the sorptive material comprises a microporous material.
59. (new): The non-planar chemical preconcentrator of claim 58, wherein the sorptive material comprises porous silicon.
60. (new): The non-planar chemical preconcentrator of claim 53, wherein the sorptive material comprises a sol-gel oxide.
61. (new): The non-planar chemical preconcentrator of claim 53, wherein the sorptive material comprises a polymer.
62. (new): The non-planar chemical preconcentrator of claim 53, wherein the sorptive material comprises a particulate material.

**The following is an examiner's statement of reasons for allowance:**

Prior art fails to teach or fairly suggest a substrate having a suspending membrane formed thereon with at least one hole formed in the suspended membrane for flow of a sample fluid therethrough, at least one resistive heating element disposed on a surface of the suspended membrane, a sorption support structure disposed on a surface of the membrane, and a sorptive material disposed on the sorption support structure to sorb and concentrate at east one chemical species from the sample fluid,



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with the chemical species being releasable from the sorptive material upon heating of the sorptive material by the at least one resistive heating element.


Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jyoti Nagpaul whose telephone number is 571-272-1273. The examiner can normally be reached on Monday thru Friday (8:00-4:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on 571-272-1267. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JN

  
Jill Warden  
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